

ATTACHMENT J.4.76

FLUOR DANIEL FERNALD LOCKOUT/TAGOUT

(HAZARDOUS ENERGY AND MATERIAL CONTROL) PROCEDURE

OP-0004

FLUOR DANIEL FERNALD LOCKOUT/TAGOUT (HAZARDOUS ENERGY AND MATERIAL CONTROL) PROCEDURE

OP-0004

Effective Date: July 15, 1997

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4/11/97
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4/11/97
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4/11/97
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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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Title: FLUOR DANIEL FERNALD LOCKOUT/TAGOUT (HAZARDOUS ENERGY AND MATERIAL CONTROL) PROCEDURE <i>COMPLIANCE WITH THIS PROCEDURE IS MANDATORY DURING THE EXECUTION OF ACTIVITIES WITHIN ITS SCOPE</i>	DOCUMENT NO: OP-0004	
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ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	04/30/93	Procedure required for energy control (Lockout and Tagout) per Request No. S92-225, initiated by A. Miller. This procedure replaces PP-FMPC-0719, dated 2/15/91, Revision 0.
1	02/14/94	Major revision to procedure to reflect new Lockout and Tagout process per Request No. S93-293, initiated by A. Miller. This procedure supersedes SSOP-0719, dated 4/30/93, Rev. 0.
2	01/19/95	Major revision to the procedure per Request No. S94-150, initiated by R. Maurer. This procedure supersedes SSOP-0719, dated 2/14/94, Rev. 1 and SSOP-1067, dated 2/24/94, Rev. 0.
3	07/15/97	Major revision to the procedure initiated by J. Curry. This procedure supersedes OP-0004, dated 1/14/95, Rev 2.

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1.0 PURPOSE

This procedure provides a system of hazardous energy and hazardous material control. It provides directions for the isolation and restoration of equipment and systems. The directions are intended to protect personnel from injury, to protect equipment from damage, and to prevent the release of hazardous material to the environment. These directions shall be implemented prior to any servicing and/or maintenance activity.

2.0 SCOPE

This Fluor Daniel Fernald (FDF) procedure applies to all FDF personnel, subcontractors, vendors, and teaming partners (hereafter collectively referred to as "employee") in FDF managed facilities. This procedure provides means by which each Facility Owner shall maintain overall control of all lockout/tagout activities within their facility, and the means by which each Authorized Employee shall maintain a measure of control over the Safety of their work environment while performing the work. **No other procedure shall take precedence over this procedure.** However, some operations may be varied as stated in specific energy isolation plans.

Work on the following is NOT covered by this procedure:

- Motorized vehicles
- Work on cord and plug connected electrical equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- Electrical equipment that maximum voltage is less than 30 volts
- On portions of a system controlled and worked on solely by CG&E when the work does not present a hazard to FEMP site workers or equipment
- Hot taps, which SHALL be conducted in accordance with RM-0021 (SPR 6-3, "Hot Tapping")

3.0 REFERENCES

- 29 CFR 1910.147, "Control of Hazardous Energy"
- MT-0003, "FEMP Work Request/Order Procedure"
- MT-0006, "Site Facilities Management"
- MT-0007, "Seasonal Facility Preservation Program"
- RM-0013, "Fire Protection Requirements Manual"
- RM-0021, "Safety Performance Requirements Manual"

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- SPR 2-3, "Safety Tags"
- SPR 2-15, "Developing an Energy Isolation Plan"
- SPR 5-2, "Electrical Safety-Related Work Practices"
- SPR 6-3, "Hot Tapping"

4.0 RESPONSIBILITIES

4.1 AFFECTED EMPLOYEES

- Successfully complete General Employee Training (GET).

4.2 AUTHORIZED EMPLOYEES

- Successfully complete all scheduled training and periodic refresher training on hazardous energy and hazardous material control.
- Control their own personal locks and DANGER - PERSONNEL WORKING tag(s).

4.3 QUALIFIED/AUTHORIZED EMPLOYEES

- Implement the requirements of this procedure, assist in the development and review of an energy or material isolation plan.
- Successfully complete all scheduled training and periodic requalification training on hazardous energy or hazardous material control.
- Obtain authorization before hanging or removing a Facility Owner lock and an associated DANGER - DO NOT OPERATE tag or a CAUTION tag.
- Control their personal locks and the DANGER - PERSONNEL WORKING tags.
- Use the necessary equipment and/or knowledge to verify the isolation of the potential hazard for which they are qualified.

4.4 CONSTRUCTION CONTRACTS MANAGER (or DESIGNEE)

- Ensure that subcontract personnel working at the FEMP perform activities in accordance with this procedure.
- In an area without an assigned Facility Owner, Construction Contract Manager shall be the Facility Owner with all responsibilities noted in this procedure.
- Coordinate activities with Facility Owners for appropriate control of hazardous energy and hazardous materials.

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- Ensure requirements stated in this procedure are incorporated into contracts with subcontractors.

4.5 ENGINEERING

- Assist the Facility Owner to ensure that whenever equipment or machines are replaced, repaired, or modified, the equipment or machine is designed with energy or material control isolating devices that will accept a (site specific) Facility Owner's lock.
- As applicable, assist in the development of energy isolation plans.

4.6 FACILITY OWNER (or DESIGNEE)

- Complete training requirements as a Qualified/Authorized Employee.
- Whenever major replacement, repair, renovation, or modification of equipment or machines is performed and new machines or equipment are installed, the Facility Owner shall coordinate with Engineering who will ensure that energy or material isolating devices are included in the design and that the equipment will accept an appropriate lock(s) and tag(s).
- May hang a lock and DANGER - DO NOT OPERATE tag, only if they meet the requirements as a Qualified/Authorized Employee.
- Maintain the Lockout/Tagout Log (see Attachment A) for tracking Facility Owner locks, DANGER - DO NOT OPERATE tags, and CAUTION tags. Obtain Lockout/Tagout Log Control Number from the Operations Assurance Lockout/Tagout Coordinator.
- Initiate a quarterly inspection of all the Facility Owner locks, DANGER - DO NOT OPERATE tags or CAUTION tags hanging within the area of responsibility. Document the results of the inspection on the Lockout/Tagout Log.
- Verify that Qualified/Authorized Employees are adequately trained to perform their work activities.
- Notify all employees who may be affected by the pending hazardous energy or hazardous material isolation.
- Ensure compliance with this procedure by all FDF and subcontract personnel working in their areas (geographic location) of responsibilities.

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4.7 QUALITY ASSURANCE

- Conduct periodic inspections of the logs, locks, and tags to ensure compliance with this procedure.
- Conduct an annual inspection of the lockout/tagout program to ensure that the requirements of DOE Order 5480.19 and 29 CFR 1910.147 are being followed.

4.8 OPERATIONS ASSURANCE LOCKOUT/TAGOUT COORDINATOR

- Designate personnel responsible for maintaining control of Facility Owner Lockout/Tagout Log books.
- Maintain the Master List and Control Numbers of Lockout/Tagout Log books.
- Monitor completion of periodic quarterly inspections and annual audits.
- Monitor lockout/tagout training status of Facility Owners and designees.
- Conduct periodic surveillance of the lockout/tagout program.

4.9 SAFETY & HEALTH REPRESENTATIVE

- Reviews and approves all energy isolation plans.

4.10 SUPERVISOR (RESPONSIBLE FOR THE ACTIVITY)

- Assigning appropriate personnel, to identify and/or isolate various hazardous energy and hazardous materials sources.
- Monitor the performance of their employees to ensure compliance with this procedure.

4.11 SUBCONTRACTORS

- Train their Authorized Employees and Supervisors in the FDF Lockout/Tagout Procedure.
- Monitor their employees for effective performance under the FDF lockout/tagout procedure.
- Verify that lower tier subcontractors adhere to the requirements of the FDF lockout/tagout procedure

4.12 TRAINING DEPARTMENT

- Conduct initial training programs that meet the requirements of this procedure.

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- Conduct annual refresher training for Affected, Authorized, and Qualified/Authorized Employees.

4.13 UTILITY ENGINEER

- For the purpose of this procedure, in an emergency or unavailability, acts as the Facility Owner/Construction Contracts Manager/etc.

5.0 GENERAL

- 5.1 Facility Owner locks shall not be used at the FEMP for any purpose other than lock and tag.
- 5.2 A tripped circuit breaker does not constitute an open circuit for the purposes of this procedure. Electrical isolation using a breaker requires the breaker to be opened or racked out (where applicable) and a locking device installed which provides a positive means to prevent closing or racking in the breaker.
- 5.3 The use of CAUTION tags should be restricted to situations in which a component or system is functional, but when some precaution or item(s) of information is necessary prior to operation. A specific application of CAUTION tags is process control of operational or functional systems. **CAUTION tags shall not be used for personnel protection.**
- 5.4 Where Facility Owner locks are either not applicable or do not provide the level of protection required, other means of isolation may be used. Those other means include air gaps, blind slips, blank flanges, jack stands, blocks, double valve isolation, etc. As a minimum, a DANGER - DO NOT OPERATE tag must be put in place.
- 5.5 Fire Protection systems are normally locked and/or tagged, however, where the lock would create a greater hazard, permission MAY be granted for a tag only isolation provided that alternative protection is approved by the Safety and Health Manager.
- 5.6 Multiple work assignments may occur under a single Facility Owner lockout/tagout lock as long as each Authorized Employee follows the requirements of this procedure.
- 5.7 Facility Owners shall have access to the training records of current employees authorized and qualified to perform lockout and tagout activities.
- 5.8 In case of an emergency, this procedure shall be suspended for the purpose of eliminating the emergency condition. **No work is to be performed to repair the condition until all energy or material sources have been locked out and tagged out.** Immediate action shall be taken to stabilize the situation. It is possible that such action may not comply with this procedure or with the energy isolation plan.
- 5.9 Temporary or partial clearance of a lockout/tagout is not allowed EXCEPT when required as part of an approved energy isolation plan.

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6.0 PREREQUISITES

- 6.1 To install a Facility Owner lock and tag at the FEMP, a Qualified/Authorized Employee must complete the Hazardous Energy and Material Control course #001622. Employees who have successfully completed course #001622 must be requalified on an annual basis per course #002077. Upon successful completion of this course, an employee is also authorized to install personal locks and tags.
- 6.2 To install a personal lock and/or tag at the FEMP, an Authorized Employee must complete the "Lock and Tag for Authorized Employee" course #002151. Employees who have successfully completed course #002151 must requalify on an annual basis.
- 6.3 General Employee Training shall contain information pertaining to lockout/tagout for Affected Employees.

7.0 PROCEDURE

7.1 DETERMINING THE NEED FOR LOCKOUT/TAGOUT

FACILITY OWNER/PERSON INITIATING WORK ACTIVITY

1. Determine if any employee will be in the potential path of hazardous energy or hazardous material. If an employee will be in the path of hazardous energy or hazardous material, if there is potential of damage to or loss of equipment operability, or if there is the potential of damage to the environment, lockout/tagout per this procedure shall be required.
2. Determine the need for an energy isolation plan per Paragraph 7.2.

7.2 DETERMINING THE NEED FOR AN ENERGY ISOLATION PLAN

FACILITY OWNER/PERSON INITIATING WORK ACTIVITY/CONSTRUCTION CONTRACTS MANAGER

1. Determine the need for an isolation plan. A plan is required if one or more of the following conditions exist:
 - The machine or equipment has the potential for stored or residual energy or reaccumulation of stored energy after shutdown that could endanger personnel.
 - The machine or equipment has more than one source of hazardous energy and/or material.
 - The machine or equipment has a single energy source that can not be readily identified, isolated and locked out.
 - Isolation and lockout of the energy source does not de-energize and/or deactivate the machine or equipment.

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- The machine or equipment is not isolated from the energy source and locked out during servicing or maintenance.
 - The lockout device is not under the "exclusive control" of the Authorized Employee(s) performing service or maintenance.
 - Servicing or maintenance creates hazard(s) to personnel in the area.
 - The employer has had an accident involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.
2. If any of the above conditions exist, designate a Qualified/Authorized Employee to generate an energy isolation plan.
 3. When directed by this procedure, unique cases regarding lockout/tagout policy and procedure are to be documented in an energy isolation plan.
 4. If an energy isolation plan is not required go to Paragraph 7.3.

QUALIFIED AUTHORIZED EMPLOYEE

5. Generate an energy isolation plan in accordance with RM-0021 (SPR 2-15, "Developing an Energy Isolation Plan") prior to the lockout/tagout activity.

NOTE: If work on liquid systems, gas systems, piping, valve isolation, electrical grounding, or rotating/moving equipment is involved, see Attachment B.

6. Maintain a copy of the plan, if any, near the job location and a copy in the Facility Owner's office.

7.3 PREPARING FOR LOCKOUT AND TAGOUT

FACILITY OWNER/PERSON INITIATING THE WORK ACTIVITY

1. The Facility Owner, or the cognizant person, initiates the lock and tag activities in her/his area of responsibilities.

NOTE: If work on liquid systems, gas systems, piping, valve isolation, electrical grounding, or rotating/moving equipment is involved, see Attachment B.

2. Discuss with the Qualified/Authorized Employee(s) the hazardous energy or hazardous material sources involved and the isolation action required.

NOTE: The Supervisor for the work activity is responsible for ensuring the Authorized Employee performing the hazardous energy or hazardous material isolation must be technically knowledgeable to evaluate the hazard being isolated.

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FACILITY OWNER

3. Verify the Qualified/Authorized Employee is trained to install Facility Owner lockout/tagout.

NOTE: The verification may be accomplished by inspecting the record of training card or training records.

4. Prepare DANGER - DO NOT OPERATE tag(s) and make appropriate entries in the Lockout/Tagout Log and by signing the tag to authorize installation. The instructions of filling out the Lockout/Tagout Sheet are provided on the reverse side of the sheet, FS-F-3988.
5. Notify employees who may be affected of the Lockout/Tagout action to be taken.

7.4 INSTALLING THE LOCKOUT AND/OR TAGOUT DEVICES

QUALIFIED/AUTHORIZED EMPLOYEE

1. Install the Facility Owner lock and DANGER - DO NOT OPERATE tag on the identified and secured energy or material isolation device.

NOTE: The Facility Owner Lock and DANGER - DO NOT OPERATE tag is the first to be installed and the last to be removed.

NOTE: If the location of the DANGER - DO NOT OPERATE tag is such that the installer cannot safely sign the tag as it is installed, the tag may be signed before installation.

2. If a Facility Owner lock cannot be installed, hang a DANGER - DO NOT OPERATE tag and use an alternate means of rendering the energy or material isolation source inoperative.

NOTE: An energy or material isolation plan must be approved prior to applying the alternate isolation method.

3. If a Facility Owner lock can not be installed, record "No Lock" on the "DANGER - DO NOT OPERATE" tag under "Lock Number" and on the Lockout/Tagout Log under "Tag and Lock Number" (Attachment A).

FACILITY OWNER

4. Maintain control of the keys to the installed Facility Owner's locks, and place the Lockout/Tagout Log in the secured lockout/tagout cabinet.

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7.5 STORED ENERGY

QUALIFIED/AUTHORIZED EMPLOYEE

1. After the locks and tags are applied to the energy isolating devices, all potentially hazardous stored or residual energy sources shall be relieved, disconnected, restrained, and otherwise made safe.

7.6 VERIFYING ISOLATION AND PROPER INSTALLATION OF LOCKOUT/TAGOUT DEVICES

WARNING

Components that are DANGER - DO NOT OPERATE tagged must not be manipulated for the purpose of independent verification.

NOTE: Independent verification SHALL be completed prior to the start of any work.

NOTE: Concurrent dual verification is permitted in only those unique cases where independent verification would not be effective; it must be approved in an approved energy isolation plan.

NOTE: The individual performing independent verification must be a different Qualified/Authorized Employee than the installer of the DANGER - DO NOT OPERATE tag and Facility Owner lock.

NOTE: The independent verification is normally separated by distance and time after the DANGER - DO NOT OPERATE tag and Facility Owner lock is installed.

QUALIFIED/AUTHORIZED EMPLOYEE

1. Independently verify the correct installation of the equipment or components covered by the lockout/tagout procedure.

NOTE: If the location of the DANGER - DO NOT OPERATE tag is such that the Independent Verifier cannot safely sign the tag as it is installed, the tag may be signed before hanging but the lockout/tagout still must be independently verified.

2. If the safe condition check/verification of isolation reveals any inconsistencies, **STOP** and notify the Supervisor responsible for the activity.
3. If the correct installation is verified, complete the DANGER - DO NOT OPERATE tag(s). Return the top copy to the Facility Owner.

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FACILITY OWNER

4. Record the verification on the Lockout/Tagout Log.

7.7 PERFORMING A SAFE CONDITION CHECK

AUTHORIZED EMPLOYEE

1. Before starting work, a review and a Safe Condition Check (a physical walkdown) of the area/equipment/system or process shall be conducted to verify the isolation of the hazardous energy and material sources.
2. Each Authorized Employee performing the activity shall hang their DANGER - PERSONNEL WORKING tag and install a personal lock.

NOTE: Hanging a DANGER - PERSONNEL WORKING tag and installing a personal lock signifies the Authorized Employee agreement with the hazardous energy/material isolation action.

3. If an inconsistency is found, **STOP** and notify the Supervisor.
4. Authorized Employees may leave their personal lock(s) and DANGER - PERSONNEL WORKING tag(s) in place for the duration of the job. They must perform a Safe Condition Check and ensure that their personal lock(s) and DANGER - PERSONNEL WORKING tag(s) are in place each time they return to the work activity.

7.8 INSTALLING A GROUP LOCKOUT

QUALIFIED/AUTHORIZED EMPLOYEE

1. Place a Facility Owner lock and DANGER - DO NOT OPERATE tag at each point of the isolation of hazardous energy or hazardous material source.
2. A different Qualified/Authorized Employee shall perform independent verification of the installation of lock(s) and tag(s).
3. Place the keys from the installed Facility Owner lock(s) into the group lock box.
4. Install a Facility Owner lock and a DANGER - DO NOT OPERATE tag on the group lock box. Complete the required information on the tag.

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AUTHORIZED EMPLOYEE

5. Perform a Safe Condition Check:
6. If in agreement with the isolation, place a personal lock and a **DANGER - PERSONNEL WORKING** tag on the group lock box and proceed with the work activity

OR

If not in agreement with isolation, **STOP** work immediately and notify the Supervisor.

7.9 TROUBLESHOOTING

FACILITY OWNER/SUPERVISOR/CONSTRUCTION CONTRACTS MANAGER

1. Initiate an energy isolation plan prior to performing the work activity.
2. Authorize lockout/tagout (using **DANGER - PERSONNEL WORKING** tag(s) and personal lock(s) only) may be allowed during single-craft work activity by Qualified/Authorized Employees, not to exceed the end of the shift.
3. Maintain a copy of the energy isolation plan near the job.

7.10 REMOVING LOCKOUTS/TAGOUTS

AUTHORIZED EMPLOYEE

NOTE: The following steps also apply when work is suspended.

1. Ensure the removal of all tools/equipment from the work site.
2. Remove the **DANGER - PERSONNEL WORKING** tag(s) and personal lock(s).
3. Notify the craft supervisor of the work status.

SUPERVISOR

4. Check the work site to confirm the completion of the work to ensure that no unsafe condition exists.
5. Notify the Facility Owner and recommend removal of the Facility Owner's lock(s) and tag(s).

FACILITY OWNER

6. Inform the Affected Employees of the restoration of the process, system, machine, or equipment.

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7. Authorize the removal of the Facility Owner lock(s), and/or DANGER - DO NOT OPERATE tag(s) and make appropriate entries in the Lockout/Tagout Log prior to removal of lock(s) and tag(s).

QUALIFIED/AUTHORIZED EMPLOYEE

8. Remove Facility Owner lock/tag
 - a. Return locks to Facility Owner.
 - b. Tags installed in a radiologically controlled area should be disposed of inside the area in accordance with the Radiological Control procedures.
 - c. Return tags from other areas to the Facility Owner for disposal.

7.11 REMOVAL OF AUTHORIZED EMPLOYEE'S LOCKS AND TAGS WHEN THE AUTHORIZED EMPLOYEE IS UNAVAILABLE

FACILITY OWNER

1. If an Authorized Employee has left a personal lock and/or DANGER - PERSONNEL WORKING tag installed and is NOT available to remove it, remove the personal lock and/or tag if it can be verified that:
 - The Authorized Employee who installed the personal lock and/or DANGER - PERSONNEL WORKING tag is NOT on site.
 - A reasonable effort has been made to contact and inform the Authorized Employee that all personal locks and/or DANGER - PERSONNEL WORKING tag are to be removed.
2. Notify the Authorized Employee's Supervisor.
3. Maintain a record of this action in a Facility Owner's Log or other chronological record of action completed.

SUPERVISOR

1. Inform the Authorized Employee of the removal of his/her personal lock and/or DANGER - PERSONNEL WORKING tag prior to resuming work at the site.

7.12 MISSING, MUTILATED, or ILLEGIBLE TAGS

ALL EMPLOYEES

1. Report any missing, mutilated, or illegible tags to the Facility Owner and/or Supervisor.

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FACILITY OWNER

2. Verify the continuing requirement for the tag in question.
3. Replace the tag and revise the Lockout/Tagout Log as appropriate. Properly dispose of previous tag, if any.

AUTHORIZED EMPLOYEE

4. Replace any of your DANGER - PERSONNEL WORKING tag that becomes missing, mutilated, or illegible. Properly dispose of previous tag, if any.

7.13 LEGACY TAGS

FACILITY OWNER

1. Install new Facility Owner lockout/tagout in place of existing non-active Facility Owner lockout/tagout. The purpose/reason for the tagout will be recorded as "Legacy" in the Lockout/Tagout Log.
2. Remove the existing non-active lockout/tagout.
3. For operational facilities and activities, request a technical review to determine continuing requirements for the "Legacy" lockout/tagout.
4. For facilities and activities scheduled or undergoing Safe Shutdown or D&D, remove the "Legacy" lockout/tagout in accordance with these processes.
5. Following technical review, the "Legacy" lockout/tagout should be replaced with a new lockout/tagout if a continuing requirement exists, or removed per this procedure if no longer required.

7.14 CAUTION TAGS

WARNING

CAUTION tags SHALL NOT be used for protection of personnel performing servicing or maintenance

NOTE: Facility Owner locks SHALL NOT be installed with CAUTION tags.

NOTE: Use of CAUTION tags shall be restricted to situations in which a component or system is functional, but some precaution or other item of information is needed prior to its operation.

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ALL EMPLOYEES

1. Notify the respective Supervisor or Facility Owner of situations requiring special operator or maintenance precautions.

FACILITY OWNER, SUPERVISOR, or QUALIFIED/AUTHORIZED EMPLOYEE

2. Determine the need for CAUTION tag(s).
3. If a CAUTION tag is required, determine the precautions and instruction to be written on the tag.
4. Prepare the CAUTION tag(s) and make appropriate entries in the Lockout/Tagout Log.

FACILITY OWNER

5. Authorize installation of the CAUTION tag(s).

QUALIFIED/AUTHORIZED EMPLOYEE

6. Identify the correct device(s) to be tagged.
7. Install a CAUTION tag on the identified device(s) ensuring that the device(s) is in the proper position.

NOTE: Independent verification is not required for installation of CAUTION tags.

7.15 PERIODIC INSPECTION

FACILITY OWNER

1. Initiate an inspection of all Facility Owner locks and DANGER - DO NOT OPERATE tags and CAUTION tags installed within her/his area of responsibility during the first month of each calendar quarter i.e., the months of January, April, July, and October.
2. Ensure that all locks and tags listed in the Lockout/Tagout Log are verified during the quarterly inspection.

QUALIFIED/AUTHORIZED EMPLOYEE

3. Using the Lockout/Tagout Log, verify the following:
 - the lock and tag are in the proper location
 - the component is in the correct position

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WARNING

Do not operate or change the position of any component or system

- the tag is legible
 - the tag accurately describes the reason for the lockout/tagout.
4. Notify the Facility Owner of any deficiency discovered and the appropriate action necessary to correct the deficiency. Inform the Facility Owner of any lockout/tagout which may be no longer required.

FACILITY OWNER

5. Document the results of the periodic quarterly inspection in the "Location/Reason for Lock and Tag" section of the Lockout/Tagout Log. The documentation should include a description of any discrepancies found, if any, and an entry that all discrepancies have been corrected following completion of corrective action. Sample entry: "July 3, 1997 - Conducted quarterly inspection. No discrepancies."
6. Notify the Operations Assurance Lockout/Tagout Coordinator of the completion of each periodic quarterly inspection.

QUALITY ASSURANCE

7. Conduct an annual audit of the lock and tag program to ensure compliance with this procedure, DOE Order 5480.19, and 29 CFR 1910.147.
8. Report the findings of the audit to the Team Coach, Operations Assurance.
9. Conduct follow up surveillance to ensure implementation of corrective action(s) for the concerns and findings identified in the annual audit.

8.0 RECORDS/DOCUMENTS

See Attachments

9.0 DRIVERS

- 29 CFR 1910, "Occupational Safety and Health Standards"
- 29 CFR 1926, "Occupational Safety and Health Standards for the Construction Industry"
- DOE 4330.4B, "Maintenance Management Program"
- DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities"

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- DOE-STD-1036-93, "Guide to Good Practices for Independent Verification"
- DOE-STD-1030-96, "Guide to Good Practices for Lockout and Tagouts"

10.0 DEFINITIONS

Affected Employee - The level of training for an Affected Employee is covered in General Employee Training (GET). An employee whose job requires her/him:

- To operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout.

or

- To work in an area in which such servicing or maintenance is being performed but does NOT require entry into the path of hazardous energy or material.

Authorized Employee (Worker) - An employee who locks out and/or tags out machines, systems or equipment in order to perform service or maintenance or whose work requires entry into the potential path of hazardous energy or hazardous material. An Affected Employee may become an Authorized Employee when assigned duties that require entry into the potential path of hazardous energy or hazardous materials.

NOTE: This (authorized) employee may apply their own personal lock(s) and **DANGER - PERSONNEL WORKING** tag(s) over systems that have been previously locked with Facility Owner lock(s) and tag(s) and a safe configuration check has been performed by the Authorized Employee.

NOTE: These (authorized) employees will be required to complete Lock and Tag for Authorized Employees, course #002151, in addition to GET training.

Capable of being locked out - An energy or material isolating device is considered capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or has a locking mechanism built into it.

CAUTION Tag - A prenumbered tag used to assure that notice of some precaution or information that is necessary prior to the operation of a process, machinery, and/or equipment is apparent. CAUTION tags shall NOT be used for personnel protection.

Concurrent Dual Verification - In operations where it may be impossible for the verifier to determine that the steps were performed correctly through observation of the completed action. These operations should be verified by another Qualified/ Authorized Employee independently observing that the proper steps, sequence, or adjustments are performed according to the energy or material isolation plan.

Construction Manager/Construction Engineer/Construction Contracts Manager - A position similar to the Facility Owner. A person who oversees construction activities within a designated work package assigned to construction.

DANGER - DO NOT OPERATE Tag (See SPR 2-3) - A prenumbered tag used to warn against hazardous conditions if machinery or equipment is energized or material is not contained or

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constrained. The tag is hung, under the authority of the Facility Owner and tracked via the Lockout/Tagout Log.

DANGER - PERSONNEL WORKING Tag (See SPR 2-3) - A tag used to confirm that each Authorized Employee working on an activity has agreed that the hazardous energy or hazardous material has been correctly isolated at the point identified by the tag.

Energy or Material Isolation Device - A mechanical device that prevents the transmission or release of hazardous energy or hazardous material. Push buttons, selector switches, and other control circuit type devices are NOT energy or material isolating devices.

Energy (or Hazardous Material) Isolation Plan (EIP) - A written plan which outlines in detail the steps for isolating and restoring hazardous energy and/or hazardous materials for a specific process, equipment, machine or system. An energy or material isolation plan is written under the authorization of the Facility Owner and approved by the Safety Department and others as needed. Examples of the energy or material isolation plan include: Specific Equipment Plans, Energy Isolation Plan, Maintenance Work Instructions, Operating Procedures, Current Controlled Drawings, and documented "walk-downs" of valve and/or equipment alignments, or other controlled documents.

Energy Source - The origin of the energy directly or indirectly supplied to a system, process or equipment.

Exclusive Control - Energization or de-energization of an isolation point under the complete control of the employee performing the work activity.

Facility Owner - An individual responsible for a facility or area at the FEMP.

Facility Owner Designee - A "designee" is authorized to act for the Facility Owner with some limited authority and responsibility authorized by the Facility Owner.

Facility Owner Locks - A uniquely identified lock (8 inches in length with a brass tag etched with the lock's identification number). This type lock is used to isolate hazardous energy and hazardous material sources under the authorization of the Facility Owner. Facility Owner locks shall be attached to a device that is capable of being locked out per the requirements of 29 CFR 1910.147.

Group Lockout - A means of isolating equipment that reduces the number of locks required to perform the work while providing the same level of protection.

Hazardous Material - Any material that by its chemical composition, physical condition or location in regards to another hazard creates a danger to nearby workers, equipment, or the environment.

Independent Verification - The act of checking a condition separately from the activities related to establishing the condition i.e, a different person, normally at a later time, verifying correct installation of lock(s) and/or tag(s).

Legacy Lockout/Tagout - A current Facility Owner lockout/tagout used to replace an inactive Facility Owner lockout/tagout which was not entered in the Lockout/Tagout Log. The legacy system is established to address Facility Owner lock(s) and tag(s) established at some time in FEMP operations or process history which were not entered into the current Lockout/Tagout system.

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Lockout - The placement of a Facility Owner lock (with associated DANGER - DO NOT OPERATE tag) on an energy or material isolating device.

Lockout Device - The component that holds the energy or materials isolating device in the safe position and prevents the energizing of a machine or equipment.

Lockout and Tagout Log (Attachment A) - A log consisting of an index and a record sheet(s) to record the placement and removal of Facility Owner locks, DANGER - DO NOT OPERATE tags and CAUTION tags on equipment.

Personal Locks - A device, issued by FDF, used by Authorized Employees to isolate the hazardous energy or material while performing an activity. This employee maintains exclusive control of their key(s).

Process Control - A method used to control an operational process (material processing/handling/transfer) on a component or system which remains functional using CAUTION tag(s) only. Components and systems are not placed out of service using process control.

Qualified/Authorized Employee - A properly trained employee capable of using the necessary equipment and/or knowledge to verify the isolation of the potential hazard for which he/she is "qualified" and who is familiar with the construction and operation of the equipment being isolated and the hazards involved.

NOTE: **The Supervisor shall determine if an employee has adequate "technical knowledge" based on their knowledge of the work involved, as well as the employee's experience, and training.**

NOTE: **The Facility Owner shall verify training by examination of the record of training card or by review of training records.**

Safe Condition Check - An inspection of conditions established to permit work to be performed within a lockout/tagout boundary.

Servicing and/or Maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes.

Subcontractor - Personnel performing work at the FEMP who are not employed by DOE, FERMCO, or a teaming partner and whose work is defined by a contract.

Supervisor (Responsible for the work activity) - Monitors the performance of their workforce and ensures that the activities are performed in a safe and compliant manner.

Tagout - The placement of a DANGER - DO NOT OPERATE tag or DANGER - PERSONNEL WORKING Tag on an energy or materials isolating device.

Tagout Device - A DANGER - DO NOT OPERATE tag or DANGER - PERSONNEL WORKING Tag.

Troubleshooting - Locating the cause of trouble in machinery or equipment.

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ATTACHMENT A - LOCKOUT/TAGOUT LOG, FS-F-3988 (cont.)

LOCKOUT/TAGOUT SHEET INSTRUCTIONS

Enter the following information:

- Column 1 - Identify the type of tag hung by circling the appropriate letter: ("D" = DANGER - Do Not Operate or "C" = Caution).
- Column 2 - Identify the reference number for the tagout. Use the last 3 digits of the work order or other facility assigned number. **N/A** If not applicable.
- Column 3 - Identify the Facility Owner Lock number applied at the component isolated from the energy **100123** N/A for Caution Tag.
- Column 4 - Identify the DANGER - Do Not Operate tag or Caution tag number applied at the component being isolated from the energy source.
- Column 5 - Identify the name of the equipment, the specific location of the component being isolated, and the reason for the hazardous energy or material isolation.
- Column 6 - Identify the position (on/off; open/closed, etc.) Of the energy isolation device.
- Column 7 - Print the initials, badge number, and the date when the Facility Owner/Designee authorized hanging his/her lock and DANGER - DO NOT OPERATE tag or Caution tag on the energy isolation device.
- Column 8 - Print the initials and badge number for the Qualified, Authorized Employee who hung the facility owner Lock and DANGER - DO NOT OPERATE tag or Caution Tag on the energy isolation device.
- Column 9 - Print the initials and badge number when the Qualified, Authorized Employee (Independent Verifier) confirmed the energy isolation sources had been properly isolated. **N/A** for Caution tag.
- Column 10 - Print the initials, badge number, and the date when the Facility Owner authorized removal of the Facility Owner Lock and DANGER - DO NOT OPERATE tag or Caution from the energy isolation device.
- Column 11 - Print the initials and badge number of the Authorized Employee who removed the Facility Owner's lock and tag or Caution tag.

Tag Type	Lock #	Location of the Lock & Tag Number for the Lock & Tag	Position: On/Off, Open/Closed	Authorized by: P.A. Number, Date	Verified by: Qual. Verifier, Date	Removed by: Facility Owner, Date
1	2	5	6	7	8	9
	3					
	4					11

When the log sheet has been completed, sign and date the line of completion and place the form in Facility Owner's file.

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ATTACHMENT B - HAZARDOUS ENERGY ISOLATION POLICY

A. WORKING ON LIQUID SYSTEMS, GAS SYSTEMS, OR PIPING

QUALIFIED/AUTHORIZED EMPLOYEE

1. When isolating liquid and/or gas systems whose maximum operating temperature is less than 200°F and maximum operating pressure is less than 500 psig the following methods shall be used:
 - a. Isolate systems and components through the use of at least one valve isolation and vent if possible. If necessary to the performance of the work, the system should be drained and cooled.
 - b. Keep the equipment in a depressurized state by tagging open a vent or drain. Use a DANGER - DO NOT OPERATE tag.
 - c. If a normal depressurization path cannot be provided within the work boundary, use other methods to ensure adequate depressurizing and draining of the system. Depressurization is verified by venting or draining the portion of the system to be worked on for at least 15 minutes to ensure system is depressurized.
2. When isolating systems or equipment whose operating temperature exceeds 200°F or operating pressure exceeds 500 psig, the following limits shall be observed in addition to those above:
 - a. At least two valves in series shall be used to provide isolation from the Hazardous Energy/Material(s).
 - b. If the two-valve protection cannot be obtained, the Facility Owner, in conjunction with OS&H, may authorize single-valve isolation if the following conditions are met:
 - (1) Alternate isolation devices (such as blank flanges or blocks) have been considered and determined to be unfeasible or impracticable.
 - (2) Approval of the single-valve isolation is documented on the energy or materials isolation plan.
 - (3) The integrity of the single isolation valve is verified by venting or draining the portion of the system to be worked on and observing it for at least 15 minutes to ensure there are no leaks.
3. For Pressurized compression fitting-equipped lines greater than two inches in diameter, a minimum of two valves in series shall be used to provide for isolation from the liquid or gas.
 - a. If the line is a fire line, then Utilities, Safety and Fire Protection must approve the energy isolation plan.
 - b. If the line is cooling water, industrial (process) water or a potable water line, the energy isolation plan must be approved by Utilities and Safety.

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ATTACHMENT B - HAZARDOUS ENERGY ISOLATION POLICY (cont.)

- c. If two valve isolation is not possible, or creates an adverse condition, an EIP must be approved by Safety.

B. WORKING ON EQUIPMENT REQUIRING VALVE ISOLATION

QUALIFIED/AUTHORIZED EMPLOYEE

1. Pneumatically or solenoid operated valves that fail open shall not be considered shut for isolation purposes unless the valve operating supplies are isolated and locked/tagged out and a gag or jacking device is installed.
2. Pneumatically or electrically operated valves that fail shut shall not be considered shut for isolation purposes unless the valves are verified shut and the valve operating supplies are isolated and locked/tagged out.
3. Relief valves and pressure safety valves shall not be used for isolation purposes.
4. To use a pneumatically or electrically operated valve as an energy control boundary, isolate the motive energy source for the valve and lockout/tagout.
5. Lockout/tagout all local and remote pneumatic and electric valve operators when the valve is used as a system isolation boundary.
6. Do not use regulators and check valves as isolation boundary valves unless the valve is mechanically restrained with a gagged device designed for that purpose.
7. Identify additional isolation control points when working on valve motor actuators with manual overrides, springs, or other operating mechanisms.
8. After locks and tags are applied to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise made safe.

C. WORKING ON ELECTRICAL EQUIPMENT REQUIRING ELECTRICAL GROUNDING

WARNING

Electrical control circuits shall not be used as boundary isolation points since they do not provide adequate protection to interrupt the main power.

QUALIFIED/AUTHORIZED EMPLOYEE

1. If electrical grounding devices are required, ensure that the location and sequence for installation of each device is specified in the energy or material isolation plan.
2. Place a DANGER - DO NOT OPERATE tag on all electrical grounding devices.

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ATTACHMENT B - HAZARDOUS ENERGY ISOLATION POLICY (cont.)

AUTHORIZED EMPLOYEE

3. Place a DANGER - PERSONNEL WORKING tag on all electrical grounding devices.

D. WORKING ON ROTATING/MOVING EQUIPMENT

QUALIFIED/AUTHORIZED EMPLOYEE

1. Block and/or otherwise secure the equipment to prevent movement.
2. Install a Facility Owner DANGER - DO NOT OPERATE tag.